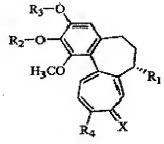
AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1. (Currently Amended) A tricyclic derivative represented by the following <Formula 1> or pharmaceutically acceptable salts thereof;[[.]]

<Formula 1>



~~(Wherein,~~wherein

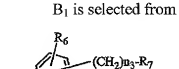
(1) R_1 is -T_1-B_1;

~~in which~~ wherein T_1 is -X_1-, -X_1-C(X_2)-, -N(R_5)-, -N(R_5)C(X_2)-, -N(R_5)S(O)n_1-, -N(R_5)C(O)-X_1- or -N(R_5)C(X_1)NH-,

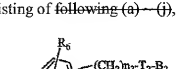
wherein ~~in that~~ X_1 and X_2 are ~~each~~ O or S[[,]];

R_5 is ~~each~~ H or C_1 ~ C_5 alkyl group, n_1 is an integer of 1~2; and

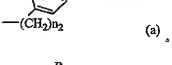
B_1 is selected from ~~a~~ the group consisting of ~~following (a) ~ (j)~~,



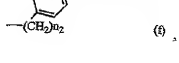
(a)



(f)



(b)



(g)

~~$-Z_1-R_7$ (c)~~ $-Z_1-T_2-B_2$ (h)

~~$-(CH(Z_2)-CH(Z_3)-O)_{n4}-R_7$ (d)~~ $-(CH(Z_2)-CH(Z_3)-O)_{n4}-T_2-B_2$ (i)

~~$-(CH_2)_{n5}-CH(R_9)-(CH_2)_{n6}-R_7$ (e)~~ $-(CH_2)_{n5}-CH(R_9)-(CH_2)_{n6}-T_2-B_2$ (j)

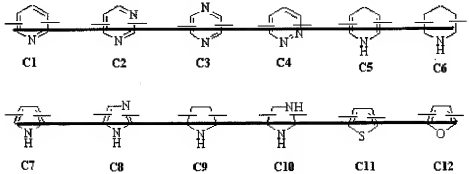
and

~~Wherein~~wherein,

R_6 and R_8 are each H, halogen, hydroxy, $C_1 \sim C_3$ alkoxy, amino, nitro, cyano or $C_1 \sim C_3$ lower alkyl group;

R_7 and R_9 are each independently halogen, hydroxy, mercapto, -ONO, $-ONO_2$ or SNO, in which R_7 and R_9 are same or different;

is a $C_5 \sim C_6$ membered saturated or unsaturated heterocyclic ring containing 1~2 of hetero atom, in which the hetero atom is selected from a group consisting of O, S and N[[,]]; ~~preferably,~~



[[,]]

~~more preferably, C1 (pyridyl group) substituted at position 2 and 6 or position 2 and 5, C7 (pyrrolyl group) substituted at position 2 and 5 or position 2 and 4, C11 (thiophenyl group) or C12 (furanyl group);~~

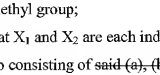
Z_1 is $C_1 \sim C_{10}$ straight-chain or branched-chain alkyl group~~, preferably $C_2 \sim C_5$ straight-chain or branched-chain alkyl group or cycloalkyl group having substituent~~;

Z_2 and Z_3 are each independently H or methyl group, in which Z_3 is H when Z_2 is methyl group, Z_2 is H when Z_3 is methyl group;

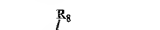
T_2 is $-X_1-$ or $-X_1-C(X_2)-$, in that X_1 and X_2 are each independently O or S;

B_2 is selected from ~~a~~ the group consisting of ~~said (a), (b), (c), (d) or (e)~~


(a),


(b),

(c),


(d), and


(e);

n_2 is an integer of 0~3;[[,]]

n_3 is an integer of 0~5;[[,]]

n_4 is an integer of 1~5[[,]]; and

n_5 and n_6 are each independently an integer of 1~6;

(2) R_2 and R_3 are each independently H, $-PO_3H_2$, phosphonate, sulfate, C_3 ~ C_7 cycloalkyl, C_2 ~ C_7 alkenyl, C_2 ~ C_7 alkynyl, C_1 ~ C_7 alkanoyl, C_1 ~ C_7 straight-chain or branched-chain alkyl or sugar, in which sugar is a monosaccharide such as glucuronyl, glucosyl or galactosyl;

(3) R_4 is OCH_3, SCH_3 or $NR_{10}R_{11}$, in which R_{10} and R_{11} are each independently H or C_{1-5} alkyl; and

(4) X is O or S.[[)]]

2. (Canceled)

3. (Currently Amended) ~~The~~ A tricyclic derivative or pharmaceutically acceptable salts thereof ~~as set forth in claim 1~~, wherein the tricyclic derivative comprises:

1)

6-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen -7-yl]-nicotineamide;

2) 5-nitrooxymethyl-furan-2-carboxylic

acid-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-amide;

~~3)~~

~~N-[(7S)-3-isopropoxy-1,2-dimethoxy-10-methyl-sulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-3-nitrooxymethyl-benzamide;~~

~~4)~~

~~N-[(7S)-3-ethoxy-1,2-dimethoxy-10-methyl-sulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-3-nitrooxymethyl-benzamide;~~

5) 6-nitrooxymethyl-pyridine-2-carboxylic

acid-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-amide;

6) 5-nitrooxymethyl-thiophene-2-carboxylic

acid-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-amide;

~~7)~~

~~N-[(7S)-3-cyclopentyloxy-1,2-dimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-3-nitrooxymethyl-benzamide;~~

8)

N-[(7S)-3-ethoxy-1,2-dimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-2-fluoro-3-nitrooxymethyl-benzamide;

9)

2-fluoro-N-[(7S)-3-isopropoxy-1,2-dimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-3-nitrooxymethyl-benzamide;

10)

2-fluoro-3-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

11)

N-[(7S)-3-cyclopentyloxy-1,2-dimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-2-fluoro-3-nitrooxymethyl-benzamide;

12)

3-fluoro-5-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

13)

N-[(7S)-3-ethoxy-1,2-dimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-3-fluoro-5-nitrooxymethyl-benzamide;

14)

3-fluoro-N-[(7S)-3-isopropoxy-1,2-dimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-5-nitrooxymethyl-benzamide;

15)

N-[(7S)-3-cyclopentyloxy-1,2-dimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-3-fluoro-5-nitrooxymethyl-benzamide;

16)

4-fluoro-3-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

17)

2-fluoro-5-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

18)

3-hydroxy-5-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

19)

3,5-*bis*-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

20)

2-hydroxy-4-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

21) 4-nitrooxymethyl-thiophene-2-carboxylic acid

[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-amide;

22) 3-nitrooxymethyl-thiophene-2-carboxylic acid

[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-amide;

~~23)~~

~~2-(3-nitrooxymethyl-phenyl)-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-acetamide;~~

~~24)~~

~~3-(2-nitrooxy-ethyl)-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;~~

25) 3-nitrooxybenzoic

acid-5-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-pyridine-2-yl-methylester;

26) 4-nitrooxybutyric

acid-5-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-pyridine-2-yl-methylester;

27) 3-nitrooxymethyl-benzoic

acid-6-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-pyridine-2-yl-methylester;

28) 4-nitrooxybutyric
acid-6-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-pyridine-2-yl-methylester;

29) 3-nitrooxymethyl-benzoic
acid-2-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-phenylester;

30) 4-nitrooxybutyric
acid-2-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-phenylester;

31) 3-nitrooxymethyl-benzoic
acid-3-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-phenylester;

32) 4-nitrooxybutyric
acid-3-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-phenylester;

33) 3-nitrooxymethyl-benzoic
acid-3-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-benzylester;

34) 4-nitrooxybutyric
acid-3-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl-carbamoyl]-benzylester;

~~35)~~
~~2-nitrosothio-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;~~

~~36)~~
~~3-nitrosooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;~~

37)

3-fluoro-5-nitrosooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

~~38)~~

~~3-nitrosothiomethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;~~

39)

3-fluoro-5-nitrosothiomethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

40)

3-fluoro-5-nitrooxymethyl-N-[(7S)-1,2,3,10-tetramethoxy-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

~~41)~~

~~3-nitrooxymethyl-N-methyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;~~

42)

3-fluoro-N-methyl-5-nitrooxymethyl-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-benzamide;

43)

2-(3-fluoro-5-nitrooxymethyl-phenyl)-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-acetamide; or

44)

2-(2-fluoro-5-nitrooxymethyl-phenyl)-N-[(7S)-1,2,3-trimethoxy-10-methylsulfanyl-9-oxo-5,6,7,9-tetrahydro-benzo[a]heptalen-7-yl]-acetamide.

4. (Canceled)

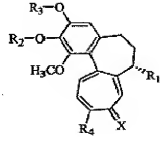
5. (Currently Amended) An anticancer agent <u>composition</u> or anti-proliferation agent <u>composition</u> ~~containing~~ <u>comprising the</u> tricyclic derivatives ~~of any one of claim 1 claim 3~~

or pharmaceutically acceptable salts thereof as set forth in any one of claims 1, 3, or 7 as an effective ingredient and a pharmaceutically acceptable excipient.

6. (Currently Amended) An angiogenesis inhibitor composition ~~containing~~ comprising the tricyclic derivatives ~~of any one of claim 1 – claim 3~~ or pharmaceutically acceptable salts thereof as set forth in any one of claims 1, 3, or 7 as an effective ingredient and a pharmaceutically acceptable excipient.

7. (New) A tricyclic derivative represented by the following <Formula 1> or pharmaceutically acceptable salts thereof:

<Formula 1>



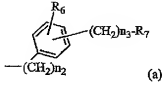
wherein

(1) R_1 is $-T_1-B_1$; wherein

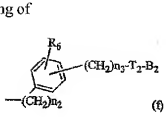
T_1 is $-X_1-$, $-X_1-C(X_2)-$, $-N(R_5)-$, $-N(R_5)C(X_2)-$, $-N(R_5)S(O)n_1-$, $-N(R_5)C(O)-X_1-$ or $-N(R_5)C(X_1)NH-$, wherein X_1 and X_2 are O or S;

R_5 is H or $C_1 \sim C_5$ alkyl group, n_1 is an integer of 1~2; and

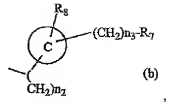
B_1 is selected from the group consisting of



(a),



(f),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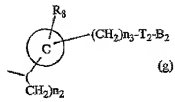
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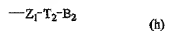
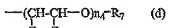
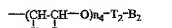
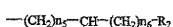

(h)


(d)


(i)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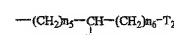

(j)

and

wherein,

R_6 is halogen, hydroxy, C_1 ~ C_3 alkoxy, amino, nitro, cyano or C_1 ~ C_3 lower alkyl group;

R_8 is H, halogen, hydroxy, C_1 ~ C_3 alkoxy, amino, nitro, cyano or C_1 ~ C_3 lower alkyl group;

R_7 and R_9 are each independently halogen, hydroxy, mercapto, -ONO, -ONO_2 or SNO, in which R_7 and R_9 are same or different;

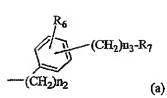

is a C_5 ~ C_6 membered saturated or unsaturated heterocyclic ring containing 1~2 of hetero atom, in which the hetero atom is selected from a group consisting of O, S and N;

Z_1 is C_1 ~ C_{10} straight-chain or branched-chain alkyl group;

Z_2 and Z_3 are each independently H or methyl group, in which Z_3 is H when Z_2 is methyl group, Z_2 is H when Z_3 is methyl group;

T_2 is -X_1- or -X_1-C(X_2)-, in that X_1 and X_2 are each independently O or S;

B_2 is selected from a the group consisting of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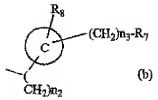
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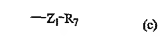
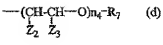
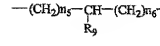

(c),

(d), and

(e);

n_2 is an integer of 0~3;

n_3 is an integer of 0~5;

n_4 is an integer of 1~5; and

n_5 and n_6 are each independently an integer of 1~6;

(2) R_2 and R_3 are each independently H, $-PO_3H_2$, phosphonate, sulfate, C_3 ~ C_7 cycloalkyl, C_2 ~ C_7 alkenyl, C_2 ~ C_7 alkynyl, C_1 ~ C_7 alkanoyl, C_1 ~ C_7 straight-chain or branched-chain alkyl or sugar, in which sugar is a monosaccharide such as glucuronyl, glucosyl or galactosyl;

(3) R_4 is OCH_3, SCH_3 or $NR_{10}R_{11}$, in which R_{10} and R_{11} are each independently H or $C_{1\sim5}$ alkyl; and

(4) X is O or S.

8. (New) The tricyclic derivative or pharmaceutically acceptable salts thereof as set forth in any one of claims 1 or 7, wherein

T_1 is $-N(R_5)C(X_2)-$, $-N(R_5)C(O)-X_1-$ or $-N(R_5)C(X_1)NH-$, wherein X_1 and X_2 are each O,

n_4 is an integer of 1~3;

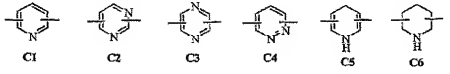
n_5 and n_6 are each independently an integer of 1~3;

R_2 and R_3 are each independently C_3 ~ C_7 cycloalkyl or C_1 ~ C_7 alkyl; and

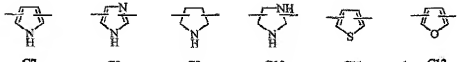
R_4 is SCH_3 or OCH_3.

9. (New) The tricyclic derivative or pharmaceutically acceptable salts thereof as set forth in any one of claims 1 or 7, wherein

is selected from the group consisting of



C1 C2 C3 C4 C5 C6



C7 C8 C9 C10 C11 and C12 .

10. (New) The tricyclic derivative or pharmaceutically acceptable salts thereof as set forth in any one of claims 1 or 7, wherein

is selected from the group consisting of C1 (pyridyl group) substituted at position 2 and 6 or position 2 and 5, C7 (pyrrolyl group) substituted at position 2 and 5 or position 2 and 4, C11 (thiophenyl group) and C12 (furanyl group).

11. (New) The tricyclic derivative or pharmaceutically acceptable salts thereof as set forth in any one of claims 1 or 7, wherein Z_1 is $C_2 \sim C_5$ straight-chain or branched-chain alkyl group or cycloalkyl group having substituent.